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countrymen. But much of this, as well as much of his show of indifference to the ordinary calls of humanity, was a part of his habitual cynicism, which was quite as much affected as real. While he refused to take part in most of the ordinary charities, and seldom or never let his name appear on a subscription paper, he was really in his own way one of the most benevolent of men; and it may be doubted whether there was another man in our community whose gifts bore so large a proportion to his personal expenses. Many are the poor who will miss his unostentatious benevolence now that he is gone.

Though he took little interest in any religious questions, he always remained faithful in name to the Greek Church in which he was born. In later years he renewed his relations with the monks of Mount Sinai; and as his strength failed, he wandered back more and more in his thoughts to the Sacred Mountain. The monastery of St. Catherine was enriched by more than one substantial present by his kindness, and the pious monks offered solemn prayers on Mount Sinai daily for his recovery from his last sickness, and sent him their congratulations by Atlantic cable on his saint's day. Now that he has left us, we feel that a bond is suddenly broken which connected us with a world which lies beyond our horizon. Such a phenomenon as Sophocles is indeed rare in our academic circles, and we feel that it was a privilege to have him among us.

*Ἡρέμ' ὑπὲρ τύμβοιο Σοφόκλεος, ἡρέμα, κισσέ,  
Ἐρπύχοις, χλοερούς ἐκπροχέων πλοκάμους.*

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## ASSOCIATE FELLOWS.

### STEPHEN ALEXANDER.

PROFESSOR STEPHEN ALEXANDER was born in Schenectady, N. Y., on September 1, 1806, and died at his residence in Princeton, N. J., on Monday evening, June 25, 1883.

His father, who was of Scotch extraction, an active and prominent business man in Schenectady, died in 1809, at the early age of forty-four, leaving his widow with two small children, one the subject of this sketch, the other a sister, two years younger, who afterwards became the wife of Professor Henry of the Smithsonian Institution.

The property of the elder Alexander at the time of his death was considerable in amount, but to some extent in an unavailable form, consisting largely of lands scattered through the States of New York and Virginia. After the settlement of the estate his widow therefore found herself, not poor exactly, but in embarrassed circumstances, with a meagre income, and obliged to observe a careful economy.

The writer has met with no account of young Alexander's childhood and youth. Judging from his subsequent character and physique, it may be presumed that he was delicate rather than robust; not noisy, boisterous, nor fond of athletic sports, but rather quiet, gentle, and studious. He must have had good school advantages, and he must have been bright and somewhat precocious, for he completed his academic course in Union College, and graduated with high honor in 1824, before he was quite eighteen years old.

After graduation he was engaged in teaching for several years, most of the time at Chittenango, N. Y. Whether he was engaged elsewhere I have not been able to ascertain certainly, though I am disposed to think that in 1830 and 1831 he was connected with the Albany Academy. At all events his mother and family moved to Albany in 1829, where his cousin (father's sister's son), Professor Henry, was then beginning his distinguished career; and during the next two or three years they were associated together in numerous astronomical observations, as appears from letters and papers in the possession of the family. In 1830, Professor Henry married Miss Alexander, and the double relationship thus established shaped the whole life and fortune of his much loved younger cousin and brother-in-law.

In 1832, Professor Henry accepted the chair of Natural Philosophy in the College of New Jersey, and removed to Princeton with his wife and family. Professor Alexander came with them, and entered the Theological Seminary; but the next year he was appointed a Tutor in the College, a year later he was made adjunct Professor of Mathematics and in 1840 he received the chair of Astronomy. This chair he retained until 1876, though in the long period intervening the style and duties of his professorship were frequently modified. For many years he taught mathematics and astronomy, and later, giving up the mathematics, he taught natural philosophy and astronomy, but astronomy always and chiefly. In 1876, at the age of seventy, he was retired, receiving from the College, as Professor Emeritus, a suitable provision for his declining years. The remainder of his life he spent mostly at Princeton, in dignified quiet,—busy always with

mind and pen, but prevented by continually increasing feebleness from appearing much in public, or completing many things for printing.

Some months before his death he met with a singular accident, by which a shoulder was dislocated and the arm broken. Although the fracture healed and the bone knit together again, almost against expectation, yet he never regained his strength, but gradually declined and died at last, so far as appeared, from mere exhaustion.

He was married twice: first, to Miss Meads of Albany, who died in 1846, leaving three daughters, two of whom are living. His second marriage was in 1850, to Miss Forman of Princeton, who survives him, with two daughters.

His eminence was recognized in various ways during his life. In 1839, he was elected a member of the American Philosophical Society, and a fellow of our own Academy of Arts and Sciences in 1850. He received the degree of LL. D. from Columbia College in 1852; in 1859 he was President of the American Association for the Advancement of Science, and in 1862 was selected as one of the original fifty members of the National Academy of Sciences.

During his connection with the College of New Jersey he accomplished a considerable amount of valuable astronomical observation; and that, although he had no observatory nor any instrumental equipment such as would now be considered indispensable in a respectable high school. In 1835, in connection with Professor Espy, he made an accurate determination of the difference of longitude between Princeton and Philadelphia by the observation of meteors. The method had been proposed (first by Halley) more than a hundred years before; but, so far as I can learn, this was its first successful application, and the only one in this country. Not long after, similar observations were made in Germany, Ireland, and Italy. But the telegraph soon superseded shooting-stars for all such purposes. A few years later he participated with Professor Henry in thermopile observations upon the radiation of sun-spots.

But his main interest lay in the observation of solar eclipses, and in this he was enthusiastic and indefatigable. He began his astronomical career before he came to Princeton, by his observations of the annular eclipse of 1831, at Berlin, Maryland. These observations, together with certain star-occultations and calculations of the longitude of Albany, were communicated to the Albany Institute. In 1834, he went to Ebenezer, Georgia, to observe the total eclipse which occurred on November 30th of that year. Through the liberality of friends of the College, he had just come into possession of a fine

three-and-a-half-inch telescope by Fraunhofer, — an instrument which as long as he lived was his pride and his delight. It was almost amusing (and a little pathetic) to hear the old gentleman say one evening, after a magnificent view of Saturn with the twenty-three-inch telescope of the Halsted Observatory, “Yes, there is more light, but the little Fraunhofer holds its own *amazingly* well.” At the time of its purchase, however, if I am not mistaken, “the little Fraunhofer” had no superior in the country except the five-inch Dollond telescope presented to Yale College about four years previously. I have never seen any account of Professor Alexander’s observations of this eclipse, and am not sure that they were ever published.

In 1860, he was the astronomical chief of the large party sent out by government to observe the eclipse of that year in Labrador. The expedition was entirely successful, and its valuable results can be found in the Coast Survey Report for 1860.

In 1869, again, he was the chairman of the committee appointed by the National Academy of Sciences to organize the observation of the solar eclipse of August 7th, and himself took part in the observations at Ottumwa, Iowa. The writer’s first experience in astronomical expeditions came with this eclipse, and it would be most ungrateful to leave unrecorded here the kindly courtesy with which our friend responded to my application for a place on one of the parties, and the helpful wisdom with which he assigned my work.

In 1838, 1854, 1865, and 1875, he observed the annular eclipses of those years, and, if his health had allowed, he would have gone to Denver with the Princeton party to observe the total eclipse of 1878. Several other partial eclipses and transits of Mercury, and a large number of star-occultations, were observed by him from time to time; and in December, 1882, he terminated the astronomical labor of more than fifty years by observing with great care and interest the transit of Venus.

But Professor Alexander’s special forte was hardly that of an observer. As has been said, he had neither the instruments nor the opportunities for regular and consecutive observations of any kind; nor had he probably the mechanical taste and skill, or the physical strength and endurance, necessary to distinguished success in that sort of work. He was, however, very anxious to obtain the means for a careful study of the Nebulæ, for which, of course, a great telescope is indispensable. Accordingly he spared no efforts to obtain such an instrument, with a corresponding observatory. The undertaking was a difficult one, but before he retired from his professorship he saw

completed the observatory, which the generosity of his friend and admirer, General Halsted, had provided; and after weary years of waiting there came at last before his death the great instrument he had dreamed of. It was my privilege to point it for him upon some of those wonderful objects he had so long desired to see with his own eyes, and to listen to his expressions of satisfaction and delight. But the great telescope came too late for him to use it much; he labored, and others entered into his labors.

As was the case with all college professors thirty years ago, his time and strength were so occupied by the duties of instruction and discipline, in the class-room and the faculty meeting, that little remained for other work. Still he accomplished a good deal in the way of writing, as well as in observing. Though he could not be called a prolific author, yet he published in various scientific periodicals a very considerable number of papers, some of which were very elaborate, and excited no little interest and discussion. Probably the most important and characteristic of them were the four following: a paper upon "The Physical Phenomena attendant upon Solar Eclipses"; one on "The Fundamental Principles of Mathematics"; one on "The Origin of the Forms and the present Condition of the Clusters of Stars and several of the Nebulæ"; and finally, his treatise on "Certain Harmonies in the Solar System." The first of these was read at the centennial meeting of the American Philosophical Society in 1843, and a full abstract, evidently revised and corrected by the author, appears in the volume of Proceedings then published. It shows a most extensive range of reading, and is an exceedingly thorough, orderly, and exhaustive, though hardly discriminating, summary of everything that any observer ever really saw, or thought he saw, on such occasions. The paper on the Fundamental Principles of Mathematics was first read before the American Academy in 1848, and afterwards published in Silliman's Journal. It is an interesting, suggestive, and eloquent essay. The subject permitted the author to indulge his genuine Scotch love for metaphysics and hair-splitting, and he found in it also opportunity for imagination and poetry to an extent that makes the article curiously singular among mathematical disquisitions. His discussion of Nebulæ and Clusters of Stars appeared in Gould's *Astronomical Journal*, in a series of papers running through many numbers. The main purpose appears to be to show that many of the nebulæ and star-clusters are stars, not in the process of formation, but of disintegration,—that the nebular stage follows, in some cases, instead of preceding, the stellar.

Laplace's nebular hypothesis had a great fascination for Professor Alexander, and lay at the foundation of most of his astronomical speculations; although, as in the case just mentioned, he sometimes reached conclusions apparently much at variance with it. He was never weary of speculations bearing upon the origin and structure of the solar system,—the relations between the distances, dimensions, masses, and characteristics of the planets. His most extensive, and undoubtedly, in his own estimate, his most valuable and important work, was "The Harmonies of the Solar System," published in 1875, as one of the Smithsonian Contributions to Knowledge. In this treatise he considered that he had established the existence of certain determining ratios in the spacing of the planetary orbits, and in their satellite systems. The method, tone, and spirit of the work are essentially that of Kepler, rather than that of Galileo or Newton, and quite justifies the title of "the American Kepler" conferred upon him by a foreign critic.

Numerous other minor papers, containing observations of occultations, longitude determinations, discussions of the asteroid system, etc., are scattered through the Proceedings of the American Philosophical Society, the volumes of Silliman's Journal, Gould's Astronomical Journal, the *Astronomische Nachrichten*, and other scientific serials. I have not been able to form anything like a complete catalogue of them in the time at my command. The published papers of Professor Alexander are, however, very few compared with the total number of those which he presented at the meetings of the different scientific organizations to which he belonged. He was a ready and fluent speaker, easily presenting his subject from mere skeleton notes; but, like some of the rest of us, he was very impatient of the dull labor of writing necessary to prepare his matter for the press.

As a scholar Professor Alexander was unusually broad and thorough. He was an excellent linguist, familiar with Greek, Latin, and Hebrew, and well versed in the principal European languages,—at least sufficiently so to be able to read any of them except Russian with ease, and to speak and write some of them. He was fond of general literature, of history, fiction, eloquence, and poetry, and himself sometimes wrote verses of no mean order. He was a lover of metaphysics, philosophy, and theology, and delighted in controversial debate. He was familiar, of course, with the ordinary literature of his departments of instruction, with Laplace's *Mécanique Celeste* and many other of his mathematical writings, and with the works of Newton, Euler, and Lagrange. He always also kept up with current mathematical

and astronomical literature, to an extent unusual in his day, when foreign periodicals were expensive and hard to get.

As a teacher and lecturer, especially in his younger days, he had a remarkable power of exciting interest and enthusiasm in the subjects he dealt with. I do not think I can do better than to quote from an admirable address delivered at his funeral by Rev. Mr. Hinsdale of Princeton, an old pupil of Dr. Alexander's, and a graduate of thirty years standing, who remembers our friend as he was in the fulness of his strength and power. Having spoken of Dr. Alexander's associates in the Princeton Faculty, Dod, Torrey, J. W. and J. A. Alexander, Hope, Henry, and Guyot, Mr. Hinsdale goes on to say :—

“Of such associations Stephen Alexander was not unworthy. He pushed his researches into the depths of mathematical and astronomical science, availing himself of his acquaintance with the principal languages of Europe. He printed for the use of his students treatises on Ratio and Proportion, Differential Calculus, and Astronomy. He was unselfish in his devotion to the interests of the College, and the advancement of learning. He aroused the admiration of his pupils by the evident extent of his knowledge and his ardor in imparting it; although it must be said that he often became so profoundly interested in setting forth the philosophy of mathematics as to forget that their acquaintance with the subject was of necessity far less than his own, and so to outrun their ability to follow and comprehend him.

“The closing lectures of his course in Astronomy, in which he discussed the Nebular Hypothesis of Laplace, were characterized by a lofty and poetic eloquence, and drew to his class-room many others than the students to whom they were addressed. . . . I vividly recall one of the occasions of which I speak; the hushed and expectant auditory; the shy, almost abashed manner of the lecturer; the rapt look, the glowing countenance, the throbbing frame, which indicated how completely he was possessed of his theme; the magnificent sweep of his ideas concerning the formation of the material universe, with its countless suns and systems; his happy application of Scripture phrase, when, pointing to the drawings of certain nebulae of remarkable form he would quote, ‘They all shall wax old as doth a garment, and as a vesture shalt thou fold them up, and they shall be changed’; the outburst of eloquence, seeming to our young minds akin to inspiration itself, with which he ascribed all the beauty and glory of creation to Him who is enthroned in majesty above all spheres, evermore controlling and guiding all, the Personal God, glorious in holiness, fearful in praises, doing wonders.”



There can be no question that for many years he impressed himself profoundly upon the hundreds of young men who graduated from the College, and is remembered by them with reverence and love.

In person he was small, slight and frail, probably never weighing a hundred and twenty pounds when in his best condition. His countenance was refined, and delicate, and on occasion luminous with feeling; his manner was gentlemanly and courteous, but usually rather reserved until some interesting topic made him forget himself, — then he was fluent and even impetuous in conversation. He was modest almost to shyness, though certainly conscious of his own real merit and ability; pure and simple-hearted as a child, and gentle unless in the presence of some wrong or meanness, — then he could blaze with unexpected fire. He was a faithful friend, a good and patriotic citizen, and an earnest and active member and officer of the church to which he belonged, always prominent in its work and counsels.

It would of course be false to say that he was faultless, but I am sure of this, — that a purer and more blameless life than his is seldom lived, and that his name will always be reverently and affectionately remembered by those who knew him best.

#### JOHN LAWRENCE LE CONTE.\*

DR. JOHN LAWRENCE LE CONTE belonged to a distinguished and wealthy family of Huguenot descent. For more than half a century the family Le Conte, father, son, and two surviving cousins, has been largely connected with the different branches of natural history of the United States. The late Dr. Le Conte was a prominent link of this respectable family pedigree.

John Lawrence Le Conte, the son of Mayor John Eaton Le Conte and Mary A. H. Lawrence, was born, May 13, 1825, in New York City. His mother died a few weeks after the birth of this child. When a boy, he was placed in St. Mary's College, Maryland, from which he graduated in 1842. His decided taste for natural history, for collecting insects, plants, or stones, developed very early, though he was never behindhand in his obligatory studies. According to the wishes of his father, his inclination for studies different from the regular course of the College was not repressed. "Once it happened

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\* I have, of course, used freely all the necrologies known to me; but I am personally indebted to the late Dr. J. L. Le Conte for a number of facts given here.